

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Original): A carbon fiber bundle comprising a plurality of single fibers, and sized with a sizing agent comprising:

a polymer having a main chain formed of carbon-carbon bonds, containing an acid group in at least a part of side chains or at least a part of main chain ends, and representing an acid value of 23 to 120 mgKOH/g as measured in accordance with ASTM D1386; or

a polymer having a main chain formed of carbon-carbon bonds, and containing at least either of an epoxy group and an ester group in at least a part of side chains or at least a part of main chain ends.

Claim 2 (Original): The carbon fiber bundle according to claim 1, wherein the sizing was conducted after pre-sized with a pre-sizing agent consisting of an epoxy resin.

Claim 3 (Original): The carbon fiber bundle according to claim 2, wherein the sizing agent comprises at least 35 wt% of an acid modified polypropylene resin (compound a1) having a weight average molecular weight of 45,000 or less and an acid value of 23 to 120 mgKOH/g as measured in accordance with ASTM D1386.

Claim 4 (Original): The carbon fiber bundle according to claim 3, wherein the sizing agent comprises at least 5 wt% of an olefin-based thermoplastic elastomer resin (compound b).

Claim 5 (Original): The carbon fiber bundle according to claim 4, wherein the compound b has a Vicat softening point of 120°C or less as measured in accordance with ASTM D1525-70.

Claim 6 (Currently Amended): The carbon fiber bundle according to ~~any of claims 3 to 5~~ claim 1, wherein the compound a1 has a weight average molecular weight of 20,000 or less, and an acid value of 40 to 75 mgKOH/g as measured in accordance with ASTM D1386.

Claim 7 (Original): The carbon fiber bundle according to claim 2, wherein the sizing agent comprises at least 40 wt% of a copolymer (compound c) obtained by copolymerizing ethylene or propylene and an epoxy-containing monomer.

Claim 8 (Currently Amended): The carbon fiber bundle according to ~~any of claims 2 to 7~~ claim 1, wherein the single fibers comprise a plurality of wrinkles on their surface, wherein a vertical difference between a highest portion and a lowest portion in a region defined by 2 μm of circumferential length \times 1 μm of fiber axial direction length of the single fibers is 40 nm or more.

Claim 9 (Currently Amended): The carbon fiber bundle according to ~~any of claims 2 to 8~~ claim 1, wherein the sizing agent comprises no more than 5 wt% of a silane coupling agent having in the molecule any one of an epoxy group, a vinyl group, an amino group, a methacrylic group, an acrylic group and a straight chain alkyl group in its molecule.

Claim 10 (Currently Amended): The carbon fiber bundle according to ~~any of claims 2 to 9~~ claim 1, cut to a prescribed length, wherein an amount of the sizing agent deposited to the total is 1 to 5 wt%.

Claim 11 (Original): The carbon fiber bundle according to claim 10, having a mass per unit length of 0.4 to 15 g/m, and a width/thickness of 3 to 10.

Claim 12 (Original): A method for producing a carbon fiber bundle comprising a plurality of single fibers, comprising the steps of:

pre-sizing the carbon fiber bundle with a pre-sizing agent consisting of an epoxy resin;

sizing the pre-sized carbon fiber bundle, so that an amount of a sizing agent to the total is 1 to 5 wt%, by using an aqueous sizing agent solution dissolving or dispersing in water the sizing agent comprising:

a polymer having a main chain formed of carbon-carbon bonds, containing an acid group in at least a part of side chains or at least a part of main chain ends, and representing an acid value of 23 to 120 mgKOH/g as measured in accordance with ASTM D1386; or

a polymer having a main chain formed of carbon-carbon bonds, containing at least either of an epoxy group and an ester group in at least a part of side chains or at least a part of main chain ends;

cutting the carbon fiber bundle to a prescribed length; and

drying the carbon fiber bundle cut to the prescribed length.

Claim 13 (Currently Amended): A thermoplastic resin composition comprising a thermoplastic resin and the carbon fiber bundle according to ~~any of claims 2 to 11~~ claim 2, wherein the carbon fiber bundle content is 3 to 60 wt%.

Claim 14 (Original): The thermoplastic resin composition according to claim 13, wherein the thermoplastic resin is a polyolefin-based resin.

Claim 15 (Currently Amended): A molded article obtained by molding the thermoplastic resin composition according to claim [[13 or]] 14.

Claim 16 (Original): The carbon fiber bundle according to claim 1, wherein the single fibers comprise a plurality of wrinkles on their surface, wherein a vertical difference between a highest portion and a lowest portion in a region defined by $2\ \mu\text{m}$ of circumferential length $\times 1\ \mu\text{m}$ of fiber axial direction length of the single fibers is 40 nm or more.

Claim 17 (Original): The carbon fiber bundle according to claim 16, wherein the sizing agent comprises:

at least 35 wt% of an acid modified polypropylene resin (compound a2) having a number average molecular weight of 45,000 or less and an acid value of 23 to 120 mgKOH/g as measured in accordance with ASTM D1386; and

at least 5 wt% of an olefin-based thermoplastic elastomer resin (compound b).

Claim 18 (Original): The carbon fiber bundle according to claim 17, wherein the compound b has a Vicat softening point of 120°C or less as measured in accordance with ASTM D1525-70.

Claim 19 (Original): The carbon fiber bundle according to claim 16, wherein the sizing agent comprises at least 40 wt% of a copolymer component consisting of one or both of:

a copolymer (compound c) obtained by copolymerizing ethylene or propylene and an epoxy-containing monomer; and

a copolymer (compound d) obtained by copolymerizing ethylene or propylene, an epoxy-containing monomer and an acrylic ester.

Claim 20 (Original): The carbon fiber bundle according to claim 19, wherein the sizing agent further comprises a copolymer (compound e) obtained by copolymerizing ethylene or propylene, an acrylic ester and a monomer containing an acid anhydride group.

Claim 21 (Currently Amended): The carbon fiber bundle according to ~~any of claims 16 to 20~~ claim 16, wherein cross-section of the single fiber have a ratio of major axis to minor axis of 1.03 to 1.20, and a Si content of 500 ppm or less as measured by ICP emission spectrometry.

Claim 22 (Currently Amended): The carbon fiber bundle according to ~~any of claims 16 to 21~~ claim 19, wherein the sizing agent comprises no more than 5 wt% of a silane coupling agent having in the molecule any one of an epoxy group, a vinyl group, an amino group, a methacrylic group, an acrylic group and a straight chain alkyl group.

Claim 23 (Currently Amended): The carbon fiber bundle according to ~~any of claims 16 to 22~~ claim 19, cut to a prescribed length, wherein an amount of the sizing agent deposited to the total is 1 to 5 wt%.

Claim 24 (Original): The carbon fiber bundle according to claim 23, having a mass per unit length of 0.4 to 15 g/m, and a width/thickness of 3 to 10.

Claim 25 (Original): A method for producing a carbon fiber bundle comprising a plurality of single fibers, wherein the single fibers comprise a plurality of wrinkles on their surface, wherein a vertical difference between a highest portion and a lowest portion in a region defined by 2 μm of circumferential length \times 1 μm of fiber axial direction length of the single fibers is 40 nm or more, comprising the steps of:

sizing the carbon fiber bundle, so that an amount of a sizing agent to the total is 1 to 5 wt%, by using an aqueous sizing agent solution dissolving or dispersing in water the sizing agent comprising:

a polymer having a main chain formed of carbon-carbon bonds, containing an acid group in at least a part of side chains or at least a part of main chain ends, and representing an acid value of 23 to 120 mgKOH/g as measured in accordance with ASTM D1386; or

a polymer having a main chain formed of carbon-carbon bonds, containing at least either of an epoxy group and an ester group in at least a part of side chains or at least a part of main chain ends;

cutting the carbon fiber bundle to a prescribed length with regulating the moisture content of the carbon fiber bundle to 20 to 60 wt%; and

drying the carbon fiber bundle cut to a prescribed length.

Claim 26 (Currently Amended): A thermoplastic resin composition comprising a thermoplastic resin and the carbon fiber bundle according to ~~any of claims 16 to 24~~ claim 2, wherein the carbon fiber bundle content is 3 to 60 wt%.

Claim 27 (Original): The thermoplastic resin composition according to claim 26, wherein the thermoplastic resin is at least one selected from the group consisting of polyolefin-based resin, polycarbonate resin, ABS resin, AS resin, polyoxymethylene resin, nylon resin, polyphenylene sulfide resin, polyether sulfone resin, polyether imide resin, polyester resin and alloy-based resins thereof.

Claim 28 (Currently Amended): A molded article obtained by molding the thermoplastic resin composition according to claim ~~[[26 or]]~~ 27.